E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XB855

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of Coastal Virginia

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible Renewal.

SUMMARY: NMFS has received a request from Virginia Electric and Power Company doing business as Dominion Energy Virginia (Dominion Energy) for authorization to take marine mammals incidental to marine site characterization surveys off of Virginia in support of the Coastal Virginia Offshore Wind Commercial (CVOW Commercial) Project. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.Davis@noaa.gov*.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Leah Davis, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is

limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment. This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review. We will review all comments

submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On September 30, 2021, NMFS received a request from Dominion Energy for an IHA to take marine mammals incidental to marine site characterization surveys off of Virginia. Dominion Energy submitted revised applications on December 3, 2021, January 21, 2022 and March 2, 2022 in response to comments from NMFS. The application was deemed adequate and complete on March 8, 2022. Dominion Energy's request is for take of a small number of 16 species of marine mammals by Level B harassment only. Neither Dominion Energy nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued IHAs to Dominion Energy for similar and related work in the same general area (85 FR 55415; September 8, 2020 (modified on December 17, 2020 (85 FR 81879) and April 22, 2021 (86 FR 21298)), 85 FR 30930; May 21, 2020, and 83 FR 39062; August 8, 2018). Dominion Energy complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the Estimated Take section.

Description of Proposed Activity

Overview

As part of its overall marine site characterization survey operations, Dominion Energy proposes to conduct high-resolution geophysical (HRG) surveys in the Lease Area and along the Offshore Export Cable Corridor (OECC) off of Virginia. The purpose of the surveys is to locate and identify potential unexploded ordnance (UXO) in support of the Dominion Energy Coastal Virginia Offshore Wind Commercial Project. Underwater sound resulting from Dominion Energy's proposed site characterization

survey activities, specifically HRG surveys, has the potential to result in incidental take of marine mammals in the form of behavioral harassment.

Dates and Duration

Dominion Energy initially anticipated that HRG survey activities would occur on approximately 122 vessel days (104 in the Lease Area and 18 in the project's OECC), with an assumed daily survey distance of 178 km/day. However, in discussions with NMFS, Dominion Energy later updated the estimated vessel distance to 58 km/day to better reflect actual daily vessel distances achieved during previous surveys. Accordingly, survey activities are now estimated to occur on up to 244 vessel days (208 days in the Lease Area and 36 days in the project's OECC). Each day that a survey vessel is operating counts as a single survey day, *e.g.*, two survey vessels operating on the same day count as two survey days. This schedule is based on assumed 24-hour operations. Dominion Energy proposes to begin survey activities upon receipt of an IHA, and continue for up to one year (though the actual duration will likely be shorter, particularly given the use of multiple vessels). The IHA would be effective for one year from the date of issuance.

Specific Geographic Region

Dominion Energy's HRG survey activities would occur in the Northwest Atlantic Ocean within federal and state waters. The surveys would occur in Lease Area OCS-A 0483, which is a portion of the Mid-Atlantic Wind Energy Area, and along an export cable corridor within the lower Chesapeake Bay as shown in Figure 1. The Lease Area is approximately 498 km^2 (122,799 acres).

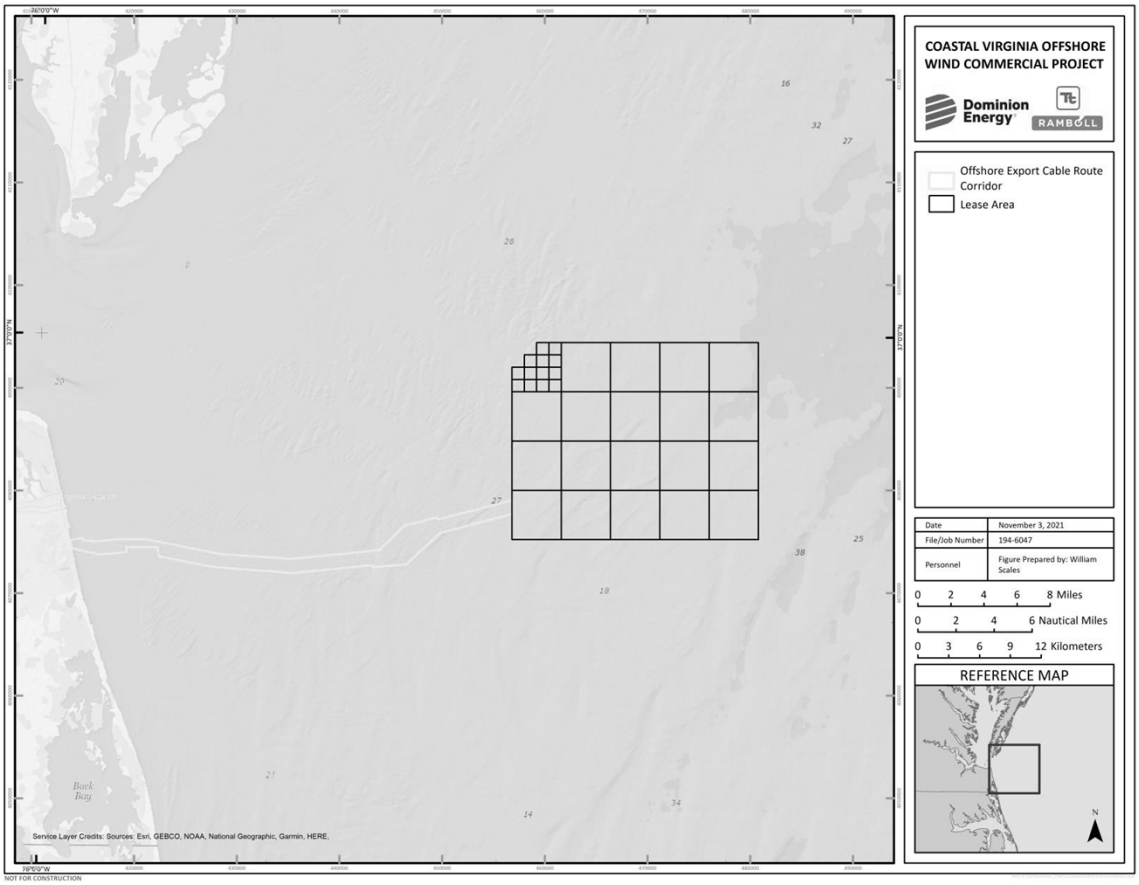

Figure 1-- Proposed Survey Area

Detailed Description of Specific Activity

Dominion Energy proposes to conduct HRG survey operations including single and multibeam depth sounding, seafloor imaging, and medium penetration sub-bottom profiling. The HRG surveys may be conducted using any or all of the following equipment types: side scan sonar, single and multibeam depth sounders, magnetometers, boomers, or sparkers. Dominion Energy anticipates that HRG survey activities would include two vessels operating concurrently (though up to four vessels may operate concurrently). Survey vessels would operate at least several kilometers apart, typically operating with even greater distances of separation between two vessels. Dominion Energy assumes that HRG survey activities would be conducted continuously 24 hours per day, with an assumed daily survey distance of 58 km per day. This assumption is based on Dominion's experience through past survey effort.

Acoustic sources planned for use during HRG survey activities proposed by Dominion Energy include the following:

- Medium penetration sub-bottom profiler (boomers and sparkers) to map deeper subsurface stratigraphy as needed. A boomer is a broadband sound source operating in the 3.5 Hz to 10 kHz frequency range. Sparkers create acoustic pulses from 50 Hz to 4 kHz omnidirectionally from the source that can penetrate several hundred meters into the seafloor. These sources are typically towed behind the vessel;

Operation of the following survey equipment types is not reasonably expected to present risk of marine mammal take, and will not be discussed further beyond the brief summaries provided below:

- Multibeam echosounders to determine water depths and general bottom topography (estimated to range from approximately minimum vessel draft to 38 m deep).
- Single beam echosounders to determine water depths and general bottom topography (estimated to range from approximately minimum vessel draft to 38 m deep)

- Sidescan sonar (SSS) is used for seabed sediment classification purposes

and to identify natural and man-made acoustic targets resting on the bottom as well as any anomalous features.

Table 1 identifies the representative survey equipment with the expected potential to result in exposure of marine mammals and potentially result in take. The make and model of the listed geophysical equipment may vary depending on availability and the final equipment choices will vary depending on the final survey design, vessel availability, and survey contractor selection.

HRG surveys are expected to use several equipment types concurrently in order to collect multiple aspects of geophysical data along one transect. Selection of equipment combinations is based on specific survey objectives.

Table 1--Summary of Representative HRG Equipment

System	Representative Equipment[a]	Operating Frequency (kHz)	RMS Source Level (dB re 1 µPA m)	Peak Source Level (dB re 1 µPA m)	Primary Beam Width (degrees)	Pulse Duration (millisecond)
Multibeam Echosounder	R2Sonics 2026	170–450	191[b]	221[b]	0.45 x 0.45–1 x 1	0.015–1.115
Medium Penetration Seismic	Geo Marine Dual 400 Sparker 800J	0.3–1.2	203[c]	212[c]	Omnidirectional	0.5–0.8
	Applied Acoustics S-Boom (Triple Plate Boomer 1000J)	0.5–3.5	203[d]	213[d]	60[e]	10

[a] Make/model of equipment may vary depending on availability. Will be finalized as part of the survey preparations and contract negotiations with the survey contractor.
[b] Reported by manufacturer.
[c] Based on data from Crocker and Fratantonio (2016) for the Applied Acoustics Dura Spark.
[d] Based on data from Crocker and Frantantonio (2016) for the Applied Acoustics S-Boom with CS.
[e] The beam width was based on data from Crocker and Frantantonio (2016) for the Applied Acoustics S-Boom.
dB re 1 µPa m – decibels referenced to 1 microPascal at 1 meter

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (*https://www.fisheries.noaa.gov/find-species)*.

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known,

that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic and Gulf of Mexico SARS. All values presented in Table 2 are the most recent available at the time of publication and are available in the 2020 SARs (Hayes *et al*. 2021) and draft 2021 SARs (available online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*).

Table 2-- Marine Mammals Likely To Occur in the Project Area That May Be Affected by Dominion Energy's Proposed Activity

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale	*Eubalaena glacialis*	Western North Atlantic	E, D, Y	368 (0, 364, 2019)	0.7	7.7
Family Balaenopteridae (rorquals)						
Fin whale	Balaenoptera physalus	Western North Atlantic	E, D, Y	6,802 (0.24, 5,573, 2016)	11	1.8
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-, -, Y	1,396 (0, 1,380, 2016)	22	12.15
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coast	-, -, N	21,968 (0.31, 17,002, 2016)	170	10.6
Sei whale	*Balaenoptera borealis*	Nova Scotia	E, D, Y	6,292 (1.02, 3,098, 2016)	6.2	0.8
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	*Physeter macrocephalus*	North Atlantic	E, D, Y	4,349 (0.28, 3,451, 2016)	3.9	0
Family Delphinidae						

Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic	-, -, N	93,233 (0.71, 54,443, 2016)	544	27
Bottlenose dolphin	*Tursiops spp.*	Western North Atlantic Offshore	-, -, N	62,851[b] (0.23, 51,914[b], 2016)	519	28
		Southern Migratory Coastal	-, -, Y	3,751 (0.6, 2,353, 2016)	23	0-18.3
Short-finned pilot whale	*Globicephala macrorhynchus*	Western North Atlantic	-, -, Y	28,924 (0.24, 23,637, 2016)	236	136
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	-, -, N	39,215 (0.3, 30,627, 2016)	306	29
Risso's dolphin	*Grampus griseus*	Western North Atlantic	-, -, N	35,215 (0.19, 30,051, 2016)	301	34
Common dolphin	*Delphinus delphis*	Western North Atlantic	-, -, N	172,974 (0.21, 145,216, 2016)	1452	390
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	-, -, N	39,921 (0.27, 32,032, 2016)	320	0
Family Phocoenidae (porpoises)						
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/ Bay of Fundy	-, -, N	95,543 (0.31, 74,034, 2016)	851	164
Order Carnivora—Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal[4]	*Halichoerus grypus*	Western North Atlantic	-, -, N	27,300 (0.22, 22,785, 2016)	1389	4453
Harbor seal	*Phoca vitulina*	Western North Atlantic	-, -, N	61,336 (0.08, 57,637, 2018)	1729	339

[1] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

[3] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.*, commercial fisheries, ship strike).

[4] NMFS' stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.

As indicated above, all 16 species (with 17 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it. All species that could potentially occur in the proposed survey areas are included in Table 3-1 of the IHA application. However, the temporal and/or spatial occurrence of several species listed in Table 3-1 of the IHA application is such that take of these species is not expected to occur. Blue whales rarely occur in the project area (U.S. Navy Marine Species Monitoring, 2018a). Clymene dolphin, dwarf sperm whale, false killer whale, Fraser's dolphin, killer whale, pantropical spotted dolphin, melon-headed whale, pygmy killer whale, pygmy sperm whale, rough-toothed dolphin, spinner dolphin, striped dolphin, white beaked dolphin, Blainville's beaked whale, Cuvier's beaked whale, Sowerby's beaked whale, and True's beaked whale are generally found in more pelagic shelf-break waters, have a preference for northern latitudes, or are so rarely sighted that their presence in the Survey Area is unlikely. While a harp seal was recently observed at the Chesapeake Tunnel Joint Venture Parallel Thimble Shoal Tunnel Project in Virginia Beach, Virginia, such an occurrence is extremely uncommon, as they, and hooded seals typically occur far north of the project area.

In addition, the Florida manatee (*Trichechus manatus*; a sub-species of the West Indian manatee) has been previously documented as an occasional visitor to the Northeast region during summer months (U.S. Fish and Wildlife Service (USFWS) 2019). However, manatees are managed by the U.S. Fish and Wildlife Service (USFWS) and are not considered further in this document.

For the majority of species potentially present in the specific geographic region, NMFS has designated only a single generic stock (*e.g.*, "western North Atlantic") for

management purposes. This includes the "Canadian east coast" stock of minke whales, which includes all minke whales found in U.S. waters and is also a generic stock for management purposes. For humpback whales, NMFS defines stocks on the basis of feeding locations*, i.e.,* Gulf of Maine. However, references to humpback whales in this document refer to any individuals of the species that are found in the specific geographic region. Additional information on these animals can be found in Sections 3 and 4 of Dominion Energy's IHA application, the draft 2021 SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*), and NMFS' website.

Below is a description of the species that have the highest likelihood of occurring in the survey area and are thus expected to potentially be taken by the proposed activities as well as further detail informing the baseline for select species (*i.e.*, information regarding current Unusual Mortality Events (UMEs) and important habitat areas).

North Atlantic right whale

The North Atlantic right whale ranges from calving grounds in the southeastern United States to feeding grounds in New England waters and into Canadian waters (Hayes *et al*. 2018). Surveys have demonstrated the existence of seven areas where North Atlantic right whales congregate seasonally, including north and east of the proposed survey area in Georges Bank, off Cape Cod, and in Massachusetts Bay (Hayes *et al*. 2018). In the late fall months (*e.g.*, October), right whales are generally thought to depart from the feeding grounds in the North Atlantic and move south to their calving grounds off Georgia and Florida. However, recent research indicates our understanding of their movement patterns remains incomplete (Davis *et al*. 2017). A review of passive acoustic monitoring (PAM) data from 2004 to 2014 throughout the western North Atlantic demonstrated nearly continuous year-round right whale presence across their entire habitat range (for at least some individuals), including in locations previously thought of

as migratory corridors, suggesting that not all of the population undergoes a consistent annual migration (Davis *et al*. 2017). However, given that Dominion Energy's surveys would occur off of Virginia, any right whales in the vicinity of the survey areas are expected to be transient, most likely migrating through the area.

The western North Atlantic population demonstrated overall growth of 2.8 percent per year between 1990 to 2010, despite a decline in 1993 and no growth between 1997 and 2000 (Pace *et al*. 2017). However, since 2010 the population has been in decline, with a 99.99 percent probability of a decline of just under 1 percent per year (Pace *et al*. 2017). Between 1990 and 2015, calving rates varied substantially, with low calving rates coinciding with all three periods of decline or no growth (Pace *et al*. 2017). On average, North Atlantic right whale calving rates are estimated to be roughly half that of southern right whales (*Eubalaena australis*; Pace *et al*. 2017), which are increasing in abundance (NMFS, 2015). In 2018, no new North Atlantic right whale calves were documented in their calving grounds; this represented the first time since annual NOAA aerial surveys began in 1989 that no new right whale calves were observed. Eighteen right whale calves were documented in 2021. As of March 13, 2022 and the writing of this proposed notice, 15 North Atlantic right whale calves have documented to have been born during this calving season. Presently, the best available population estimate for North Atlantic right whales is 386 per the 2021 draft Atlantic SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*).

The proposed survey area overlaps part of the migratory corridor Biologically Important Area (BIA) for North Atlantic right whales (effective March-April and November-December) that extends from Massachusetts to Florida (LeBrecque *et al*. 2015). Off the coast of Virginia, the migratory BIA extends from the coast to beyond the shelf break. This important migratory area is approximately 269,488 km^2 in size and is

comprised of the waters of the continental shelf offshore the East Coast of the United States, extending from Florida through Massachusetts. NMFS' regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMA) for right whales in 2008. SMAs were developed to reduce the threat of collisions between ships and right whales around their migratory route and calving grounds. The proposed survey area is in the vicinity of the SMA off of the Chesapeake Bay that is active from November 1 through April 30 of each year. Within SMAs, the regulations require a mandatory vessel speed (less than 10 kn) for all vessels greater than 65 ft.

Elevated North Atlantic right whale mortalities have occurred since June 7, 2017, along the U.S. and Canadian coast. This event has been declared an Unusual Mortality Event (UME), with human interactions, including entanglement in fixed fishing gear and vessel strikes, implicated in at least 15 of the mortalities thus far. As of March 13, 2022, a total of 34 confirmed dead stranded whales (21 in Canada; 13 in the United States) have been documented. The cumulative total number of animals in the North Atlantic right whale UME has been updated to 49 individuals to include both the confirmed mortalities (dead stranded or floaters; n=34) and seriously injured free-swimming whales (n=15) to better reflect the confirmed number of whales likely removed from the population during the UME and more accurately reflect the population impacts. More information is available online at: *https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2022-north-atlantic-right-whale-unusual-mortality-event*.

Information on right whale Slow Zones can be found on NMFS' website (*https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales*).

Fin whale

Fin whales are common in waters of the U.S. Atlantic Exclusive Economic Zone (EEZ), principally from Cape Hatteras northward (Waring *et al.* 2016). Fin whales are present in the Mid-Atlantic region during all four seasons, although sighting data indicate that they are more prevalent during winter, spring, and summer (Hayes *et al.* 2019). While fall is the season of lowest overall abundance off Virginia, they do not depart the area entirely. Fin whales, much like humpback whales, seem to exhibit habitat fidelity to feeding areas (Kenney and Vigness-Raposa 2010; Hayes *et al.* 2019). While fin whales typically feed in the Gulf of Maine and the waters surrounding New England, mating and calving (and general wintering) areas are largely unknown (Hayes *et al.* 2019).

Humpback whale

Humpback whales are found worldwide in all oceans. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and humpbacks continued to be listed as endangered. On September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259; September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whale that is expected to occur in the survey area, though these individuals are not necessarily from the Gulf of Maine feeding population managed as a stock by NMFS. Barco *et al*. (2002) estimated that, based on photo-identification, only 39 percent of individual humpback whales observed along the mid- and south Atlantic U.S. coast are from the Gulf of Maine stock. Bettridge *et al*. (2015) estimated the size of this West Indies DPS population at 12,312 (95 percent CI 8,688-15,954) whales in 2004-05, which is consistent with previous population estimates of approximately 10,000-11,000 whales (Stevick *et al*. 2003; Smith *et al*. 1999) and the increasing trend for the West Indies DPS (Bettridge *et al*. 2015).

Although humpback whales are migratory between feeding areas and calving areas, individual variability in the timing of migrations may result in the presence of individuals in high-latitude areas throughout the year (Straley, 1990). Records of humpback whales off the U.S. mid-Atlantic coast (New Jersey to North Carolina) from January through March suggest these waters may represent a supplemental winter feeding ground used by juvenile and mature humpback whales of the U.S. and Canadian North Atlantic stocks (LaBrecque *et al*., 2015).

Three previous UMEs involving humpback whales have occurred since 2000, in 2003, 2005, and 2006. Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. Partial or full necropsy examinations have been conducted on approximately half of the 157 known cases (as of March 13, 2022). Of the whales examined, about 50 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. More information is available at: *https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2022-humpback-whale-unusual-mortality-event-along-atlantic-coast.*

Minke whale

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45° W) to the Gulf of Mexico (Waring *et al.* 2016). This species generally occupies waters less than 100 m deep on the continental shelf. Little is known about minke whales' specific movements through the mid-Atlantic region; however, there

appears to be a strong seasonal component to minke whale distribution, with acoustic detections indicating that they migrate south in mid-October to early November, and return from wintering grounds starting in March through early April (Risch *et al.* 2014). Northward migration appears to track the warmer waters of the Gulf Stream along the continental shelf, while southward migration is made farther offshore (Risch *et al.* 2014). Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 122 strandings at the time of publication of this notice. There have been eight recorded strandings in Virginia and two in North Carolina. This event has been declared a UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: *https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2022-minke-whale-unusual-mortality-event-along-atlantic-coast.*

Sei whale

The Nova Scotia stock of sei whales occurs in deeper waters of the continental shelf edge waters of the eastern United States and northeastward to south of Newfoundland. The southern portion of the stock's range during spring and summer includes the Gulf of Maine and Georges Bank. Spring is the period of greatest abundance in U.S. waters, with sightings concentrated along the eastern margin of Georges Bank and into the Northeast Channel area, and along the southwestern edge of Georges Bank in the area of Hydrographer Canyon (Waring *et al.* 2015). In the waters off of Virginia, sei whales are uncommon; however, a 2018 aerial survey conducted by the U.S. Navy recorded sei whales in the area surrounding Norfolk Canyon (U.S. Navy n.d.).

Atlantic white-sided dolphin

Atlantic white-sided dolphins occur in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100 m depth contour from central West Greenland to North Carolina (Waring *et al.* 2017). The Gulf of Maine stock is most common in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al.* 1997). During January to May, low numbers of white-sided dolphins occur from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia to South Carolina. From June through September, large numbers of white-sided dolphins occur from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine. Infrequent Virginia and North Carolina observations appear to represent the southern extent of the species' range during the winter months (Hayes *et al.* 2019).

Bottlenose dolphin

The population of bottlenose dolphins in the North Atlantic consists of a complex mosaic of dolphin stocks (Waring *et al.* 2016). There are two stocks that may be found in the vicinity of the Survey Area—the western North Atlantic Offshore Stock (WNAOS) and the Southern Coastal Migratory Stock (SCMS). There are two distinct bottlenose dolphin morphotypes: coastal and offshore. The coastal morphotype resides in waters typically less than 20 m (65.6 ft) deep, along the inner continental shelf (within 7.5 km [4.6 miles] of shore; Hayes *et al.* 2018). This coastal population was further subdivided into seven stocks based largely upon spatial distribution (Waring *et al.* 2016). The SCMS is the coastal stock found south of Assateague, Virginia, to northern Florida and is the stock most likely to be encountered in the vicinity of the export cable portion of the Survey Area. Seasonally, SCMS movements indicate they are mostly found in southern

North Carolina (Cape Lookout) from October to December; they continue to move farther south from January to March to as far south as northern Florida and move back north to coastal North Carolina from April to June. SCMS bottlenose dolphins occupy waters north of Cape Lookout, North Carolina, to as far north as Chesapeake Bay from July to August. An observed shift in spatial distribution during a summer 2004 survey indicated that the northern boundary for the SCMS may vary from year to year (Hayes *et al.* 2018). The offshore population consists of one stock (WNAOS) in the western North Atlantic Ocean distributed primarily along the outer continental shelf and continental slope, and distributed widely during the spring and summer from Georges Bank to the Florida Keys with late summer and fall incursions as far north the Gulf of Maine depending on water temperatures (Kenney 1990; Hayes *et al.* 2017). The WNAOS generally occurs seaward of 34 km (21 miles) and in deeper waters.

A combined genetic and logistic regression analysis that incorporated depth, latitude, and distance from shore was used to model the probability that a particular common bottlenose dolphin group seen in coastal waters was of the coastal versus offshore morphotype (Garrison *et al.* 2017a). North of Cape Hatteras during summer months, there is strong separation between the coastal and offshore morphotypes (Kenney 1990; Garrison *et al.* 2017a), and the coastal morphotype is nearly completely absent in waters >20 m depth. South of Cape Hatteras, the regression analysis indicated that the coastal morphotype is most common in waters <20 m deep, but occurs at lower densities over the continental shelf, in waters >20 m deep, where it overlaps to some degree with the offshore morphotype. For the purposes of defining stock boundaries, estimating abundance, and identifying bycaught samples, the offshore boundary of the SMCS is defined as the 20-m isobath north of Cape Hatteras and the 200-m isobath south of Cape Hatteras. In summary, this stock is best delimited in warm water months, when it overlaps least with other stocks, as common bottlenose dolphins of the coastal

morphotype that occupy coastal waters from the shoreline to 200 m depth from Cape Lookout to Cape Hatteras, North Carolina, and coastal waters 0-20 m in depth from Cape Hatteras to Assateague, Virginia, including Chesapeake Bay (Hayes *et al.* 2018).

Pilot whale

Long-finned and short-finned pilot whales occur in the Western Atlantic. Both species of pilot whale are more generally found along the edge of the continental shelf at depths of 100 to 1,000 m (330 to 3,300 ft), choosing areas of high relief or submerged banks. Long-finned pilot whales in the western North Atlantic are more pelagic, occurring in especially high densities in winter and early spring over the continental slope, then moving inshore and onto the shelf in summer and autumn following squid and mackerel populations (Reeves *et al.* 2002). They frequently travel into the central and northern Georges Bank, Great South Channel, and northward into the Gulf of Maine areas during the late spring through late fall (Hayes *et al.* 2019). Short-finned pilot whales prefer tropical, subtropical, and warm temperate waters (Jefferson *et al.* 2015). The short-finned pilot whale mostly ranges from New Jersey south through Florida, the northern Gulf of Mexico, and the Caribbean without any seasonal movements or concentrations (Hayes *et al.* 2019). The latitudinal ranges of the two species remain uncertain, although south of Cape Hatteras, most pilot whale sightings are expected to be short-finned pilot whales, while north of ~42° N most pilot whales are expected to be long-finned pilot whales (Hayes *et al.* 2019).

Risso's dolphin

Risso's dolphins are distributed worldwide in tropical and temperate seas and in the Northwest Atlantic occur from Florida to eastern Newfoundland. The species has an apparent preference for steep, shelf-edge habitats between about 400 to 1,000 m (1,312 to 3,280 ft) deep (Baird 2009). Risso's dolphin of the western North Atlantic stock prefers temperate to tropical waters typically from 15 to 20 °C (59 to 68 °F) and are rarely found

in waters below 10 °C (50 °F). Off the northeastern U.S. coast, Risso's dolphins are distributed along the continental shelf edge from Cape Hatteras northward to Georges Bank during spring, summer, and autumn. In winter, the range is in the mid-Atlantic Bight and extends outward into oceanic waters. In general, the population occupies the mid-Atlantic continental shelf edge year round (Hayes *et al.* 2019).

Common dolphin

The common dolphin is found world-wide in temperate to subtropical seas. In the North Atlantic, common dolphins are commonly found over the continental shelf between the 200 m and 2,000 m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge. Common dolphins have been noted to be associated with Gulf Stream features (CETAP 1982; Selzer and Payne 1988; Waring *et al.* 1992). The species is seasonally found in abundance between Cape Hatteras and Georges Bank from mid-January to May. Between mid-summer and fall they migrate onto Georges Bank and the Scotian Shelf, and large aggregations occur on Georges Bank in fall (Reeves *et al.* 2002; Hayes *et al.* 2019). The species is less common south of Cape Hatteras, although schools have been reported as far south as the Georgia/South Carolina border (Hayes *et al.* 2019).

Sperm whale

The distribution of the sperm whale in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al.* 2019). The basic social unit of the sperm whale appears to be the mixed school of adult females plus their calves and some juveniles of both sexes, normally numbering 20-40 animals in all. There is evidence that some social bonds persist for many years (Christal *et al.* 1998). This species forms stable social groups, site fidelity, and latitudinal range limitations in groups of females and juveniles (Whitehead, 2002). In winter, sperm whales concentrate east and northeast of Cape Hatteras. In spring, distribution shifts northward to east of

Delaware and Virginia, and is widespread throughout the central Mid-Atlantic Bight and the southern part of Georges Bank. In the fall, sperm whale occurrence on the continental shelf south of New England reaches peak levels, and there remains a continental shelf edge occurrence in the Mid-Atlantic Bight (Waring *et al.* 2015). Off the coast of Virginia, sperm whales have recently been observed spending a significant amount of time near Norfolk Canyon and in waters over 1,800 m deep (6,000 ft; U.S. Navy n.d. 2017).

Atlantic spotted dolphin

Atlantic spotted dolphins are found in tropical and warm temperate waters along the continental shelf from 10 to 200 m (33 to 650 ft) deep to slope waters greater than 500 m (1,640 ft). Their range extends from southern New England, south to Gulf of Mexico and the Caribbean to Venezuela (Waring *et al.* 2014). This stock regularly occurs in continental shelf waters south of Cape Hatteras and in continental shelf edge and continental slope waters north of this region (Waring *et al.* 2014). There are two forms of this species, with the larger ecotype inhabiting the continental shelf and is usually found inside or near the 200 m isobaths (Waring *et al.* 2014).

Harbor porpoise

The harbor porpoise inhabits shallow, coastal waters, often found in bays, estuaries, and harbors. In the western Atlantic, they occur from Cape Hatteras north to Greenland. During summer (July to September), harbor porpoises are concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 m deep with a few sightings in the upper Bay of Fundy and on Georges Bank. During fall (October-December) and spring (April-June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south. They occur from the coastline to deep waters (>1,800 m), although the majority of the population occurs over the continental shelf. The harbor porpoise is likely to occur in the waters of the mid-Atlantic during winter months, as this species prefers cold temperate and subarctic waters

(Hayes *et al.* 2019). Harbor porpoise generally move out of the Mid-Atlantic during spring, migrating north to the Gulf of Maine. There does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region (Hayes *et al.* 2018).

Gray seal

The gray seal occurs on both coasts of the Northern Atlantic Ocean and are divided into three major populations (Hayes *et al.* 2019). The western north Atlantic stock occurs in eastern Canada and the northeastern United States, occasionally as far south as North Carolina. Gray seals inhabit rocky coasts and islands, sandbars, ice shelves and icebergs (Hayes *et al.* 2019). In the United States, gray seals congregate in the summer to give birth at four established colonies in Massachusetts and Maine (Hayes *et al.* 2019). From September through May, they disperse and can be abundant as far south as New Jersey. The range of gray seals appears to be shifting as they are regularly being reported further south than they were historically (Rees *et al.* 2016).

Gray seals are uncommon in Virginia and the Chesapeake Bay. Only 15 gray seal strandings were documented in Virginia from 1988 through 2013 (Barco and Swingle 2014). They are rarely found resting on the rocks around the portal islands of the Chesapeake Bay Bridge Tunnel (CBBT) from December through April alongside harbor seals. Seal observation surveys conducted at the CBBT recorded one gray seal in each of the 2014/2015 and 2015/2016 seasons while no gray seals were reported during the 2016/2017 and 2017/2018 seasons (Rees *et al.* 2016, Jones *et al.* 2018).

Harbor seal

Harbor seals are the most abundant seals in the waters of the eastern United States and are commonly found in all nearshore waters of the Atlantic Ocean from Newfoundland, Canada southward to northern Florida (Hayes *et al.* 2019). While harbor seals occur year-round north of Cape Cod, they only occur south of Cape Cod (southern

New England to New Jersey) during winter migration, typically September through May (Kenney and Vigness-Raposa 2010; Hayes *et al.* 2019). During the summer, most harbor seals can be found north of Massachusetts within the coastal waters of central and northern Maine as well as the Bay of Fundy (Hayes *et al.* 2019).

Since July 2018, elevated numbers of harbor seal and gray seal mortalities have occurred across Maine, New Hampshire and Massachusetts. This event has been declared a UME. Additionally, stranded seals have shown clinical signs as far south as Virginia, although not in elevated numbers. Therefore the UME investigation now encompasses all seal strandings from Maine to Virginia. As of March, 2020 there a total of 3,152 reported strandings (of all species), though only 10 occurred in Virginia while 8 were recorded in Maryland. Full or partial necropsy examinations have been conducted on some of the seals and samples have been collected for testing. Based on tests conducted thus far, the main pathogen found in the seals is phocine distemper virus. NMFS is performing additional testing to identify any other factors that may be involved in this UME. This UME is non-active and pending closure, and therefore, it is not discussed further in this notice. Information on this UME is available online at: *www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along.*

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on

directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 1.

Table 3-- Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

***** Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al*. (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*. 2006; Kastelein *et al*. 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. 16 marine mammal species (14 cetacean and two phocid pinniped species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.*, all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.*, all delphinids and the sperm whale), and one is classified as high-frequency cetaceans (*i.e.*, harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a similar amount of time, and occurring in the Mid-Atlantic region, including waters off of North Carolina and Virginia (*e.g.*, 85 FR 36537, June 17, 2020; 86 FR 43212, August 6, 2021). No significant new information is available, and we refer the reader to these documents rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by Dominion Energy's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Background on Active Acoustic Sound Sources and Acoustic Terminology

This subsection contains a brief technical background on sound, on the characteristics of certain sound types, and on metrics used in this proposal inasmuch as

the information is relevant to the specified activity and to the summary of the potential effects of the specified activity on marine mammals. For general information on sound and its interaction with the marine environment, please see, *e.g.*, Au and Hastings (2008); Richardson *et al*. (1995); Urick (1983).

Sound travels in waves, the basic components of which are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly, except in certain cases in shallower water. Amplitude is the height of the sound pressure wave or the "loudness" of a sound and is typically described using the relative unit of the decibel. A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure (for underwater sound, this is 1 microPascal (μPa)), and is a logarithmic unit that accounts for large variations in amplitude. Therefore, a relatively small change in dB corresponds to large changes in sound pressure. The source level (SL) represents the SPL referenced at a distance of 1 m from the source (referenced to 1 μPa), while the received level is the SPL at the listener's position (referenced to 1 μPa).

Root mean square (rms) is the quadratic mean sound pressure over the duration of an impulse. Root mean square is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urick, 1983). Root mean square accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak pressures.

Sound exposure level (SEL; represented as dB re 1 μPa^2-s) represents the total energy in a stated frequency band over a stated time interval or event and considers both intensity and duration of exposure. The per-pulse SEL is calculated over the time window containing the entire pulse (*i.e.*, 100 percent of the acoustic energy). SEL is a cumulative metric; it can be accumulated over a single pulse, or calculated over periods containing multiple pulses. Cumulative SEL represents the total energy accumulated by a receiver over a defined time window or during an event. Peak sound pressure (also referred to as zero-to-peak sound pressure or 0-pk) is the maximum instantaneous sound pressure measurable in the water at a specified distance from the source and is represented in the same units as the rms sound pressure.

When underwater objects vibrate or activity occurs, sound-pressure waves are created. These waves alternately compress and decompress the water as the sound wave travels. Underwater sound waves radiate in a manner similar to ripples on the surface of a pond and may be either directed in a beam or beams or may radiate in all directions (omnidirectional sources), as is the case for sound produced by the pile driving activity considered here. The compressions and decompressions associated with sound waves are detected as changes in pressure by aquatic life and man-made sound receptors such as hydrophones.

Even in the absence of sound from the specified activity, the underwater environment is typically loud due to ambient sound, which is defined as environmental background sound levels lacking a single source or point (Richardson *et al*. 1995). The sound level of a region is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.*, wind and waves, earthquakes, ice, atmospheric sound), biological (*e.g.*, sounds produced by marine mammals, fish, and invertebrates), and anthropogenic (*e.g.*, vessels, dredging, construction) sound. A number of sources contribute to ambient sound, including wind

and waves, which are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kHz (Mitson, 1995). In general, ambient sound levels tend to increase with increasing wind speed and wave height. Precipitation can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times. Marine mammals can contribute significantly to ambient sound levels, as can some fish and snapping shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz. Sources of ambient sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, geophysical surveys, sonar, and explosions. Vessel noise typically dominates the total ambient sound for frequencies between 20 and 300 Hz. In general, the frequencies of anthropogenic sounds are below 1 kHz and, if higher frequency sound levels are created, they attenuate rapidly.

The sum of the various natural and anthropogenic sound sources that comprise ambient sound at any given location and time depends not only on the source levels (as determined by current weather conditions and levels of biological and human activity) but also on the ability of sound to propagate through the environment. In turn, sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10-20 dB from day to day (Richardson *et al*. 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals. Details of source types are described in the following text.

Sounds are often considered to fall into one of two general types: pulsed and non-pulsed (defined in the following). The distinction between these two sound types is

important because they have differing potential to cause physical effects, particularly with regard to hearing (*e.g.*, Ward, 1997 in Southall *et al*. 2007). Please see Southall *et al*. (2007) for an in-depth discussion of these concepts. The distinction between these two sound types is not always obvious, as certain signals share properties of both pulsed and non-pulsed sounds. A signal near a source could be categorized as a pulse, but due to propagation effects as it moves farther from the source, the signal duration becomes longer (*e.g.*, Greene and Richardson, 1988).

Pulsed sound sources (*e.g.*, airguns, explosions, gunshots, sonic booms, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986, 2005; Harris, 1998; NIOSH, 1998; ISO, 2003) and occur either as isolated events or repeated in some succession. Pulsed sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features.

Non-pulsed sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or intermittent (ANSI, 1995; NIOSH, 1998). Some of these non-pulsed sounds can be transient signals of short duration but without the essential properties of pulses (*e.g.*, rapid rise time). Examples of non-pulsed sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems. The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

Sparkers and boomers produce pulsed signals with energy in the frequency ranges specified in Table 1. The amplitude of the acoustic wave emitted from sparker sources is equal in all directions (*i.e.*, omnidirectional), while other sources planned for use during

the proposed surveys have some degree of directionality to the beam, as specified in Table 1.

Summary on Specific Potential Effects of Acoustic Sound Sources

Underwater sound from active acoustic sources can include one or more of the following: temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al*. 2007).

Animals in the vicinity of Dominion Energy's proposed HRG survey activity are unlikely to incur even TTS due to the characteristics of the sound sources, which include relatively low source levels (176 to 205 dB re 1 µPa-m) and generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS, as it is unlikely that exposure would occur close enough to the vessel for received levels to exceed peak pressure TTS criteria, and that the cumulative duration of exposure would be insufficient to exceed cumulative sound exposure level (SEL) criteria. Even for high-frequency cetacean species (*e.g.*, harbor porpoises), which have the greatest sensitivity to potential TTS, individuals would have to make a very close approach and also remain very close to vessels operating these sources in order to receive multiple exposures at relatively high levels, as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce

TTS than would continuous exposures of the same duration (*i.e.*, intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range. Further, the restricted beam shape of many of HRG survey devices planned for use (Table 1) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity,

and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for most HRG survey equipment types planned for use (Table 1) and the brief period when an individual mammal is likely to be exposed.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fish, zooplankton; *i.e.*, effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area relatively quickly, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the HRG survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

Vessel Strike

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are generally larger and of which there is much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975-2003 and found that most collisions occurred in the open ocean and involved

large vessels (*e.g.*, commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4-5 knots (7.4 – 9.3 km/hr). At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of Dominion Energy's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to HRG sources. Based primarily on the characteristics of the signals produced by the acoustic

sources planned for use, Level A harassment is neither anticipated (even absent mitigation) nor proposed to be authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones (EZs) and shutdown measures) discussed in detail below in the **Proposed Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimate.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment– Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation,

experience, demography, behavioral context) and can be difficult to predict (Southall *et al.* 2007, Ellison *et al.* 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 µPa (rms) for the impulsive sources (*i.e.*, boomers, sparkers) evaluated here for Dominion Energy's proposed activity.

Level A harassment- NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS's 2018 Technical Guidance, which may be accessed at *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Dominion Energy's proposed activity includes the use of impulsive (*i.e.*, sparkers and boomers) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Dominion Energy's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Maximum estimated Level A harassment isopleths were less than 6 m for all sources and hearing groups with the exception of an estimated 54 m zone calculated for high-frequency

cetaceans during use of the Applied Acoustics S-Boom Boomer, (see Table 1 for source characteristics). Dominion Energy did not request authorization of take by Level A harassment, and no take by Level A harassment is proposed for authorization by NMFS.

Ensonified Area

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and directionality to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1).

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment types that may be used during the proposed surveys and the source levels associated with those HRG equipment types.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by Dominion Energy that has the potential to result in Level B harassment of marine mammals, the Geo Marine Dual 400 Sparker 800J would produce the largest Level B harassment isopleth (141 m; see Table 6-3 of Dominion Energy's application). The Applied Acoustics S-Boom (Triple Plate Boomer

1000J) would produce a Level B harassment isopleth of 22 m. Although Dominion Energy does not expect to use the Geo Marine Dual 400 Sparker 800J source on all planned survey days, it proposes to assume, for purposes of analysis, that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory and the Marine-life Data and Analysis Team, based on the best available marine mammal data from 1992-2019 obtained in a collaboration between Duke University, the Northeast Regional Planning Body, the University of North Carolina Wilmington, the Virginia Aquarium and Marine Science Center, and NOAA (Roberts *et al*. 2016a; Curtice *et al*. 2018), represent the best available information regarding marine mammal densities in the survey area. More recently, these data have been updated with new modeling results and include density estimates for pinnipeds (Roberts *et al*. 2016, 2017, 2018, 2020, 2021).

The density data presented by Roberts *et al*. (2016b, 2017, 2018, 2020, 2021) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from eight physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al*. 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at *https://seamap.env.duke.edu/models/Duke/EC/.* Marine mammal

density estimates in the survey area (animals/km^2) were obtained using the most recent model results for all taxa (Roberts *et al*. 2016, 2017, 2018, 2020, 2021), with the exception of the North Atlantic right whale (discussed below). The updated models incorporate additional sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For the exposure analysis, the density data from Roberts *et al.* (2016, 2017, 2018, 2020, 2021) were mapped using a geographic information system (GIS). For the full survey area, Dominion Energy averaged the densities of each species as reported by Roberts *et al*. (2016, 2017, 2018, 2020, 2021) by season; thus, a density was calculated for each species for spring, summer, fall and winter. To be conservative, the greatest seasonal density calculated for each species was then carried forward in the exposure analysis. The largest estimated seasonal densities (animals per km^2) of all marine mammal species that may be taken by the proposed survey, for all survey areas, is shown in Table 4, below. Below, we discuss how densities were assumed to apply to specific species for which the Roberts *et al*. (2016b, 2017, 2018, 2020, 2021) models provide results at the genus or guild level. Additional data regarding average group sizes from survey effort in the region was considered to ensure take estimates are adequate to account for anticipated real-world encounter rates.

For bottlenose dolphin densities, Roberts *et al*. (2016b, 2017, 2018) does not differentiate by stock. Given the southern coastal migratory stock's propensity to occur in waters shallower than the 25 m (82 ft) isobath north of Cape Hatteras (Reeves *et al.* 2002; Hayes *et al.* 2018), the project's offshore export cable route corridor segment was roughly divided along the 25 m (82 ft) isobath. Roughly 90 percent of the cable corridor is 25 m (82 ft) or less in depth. The Lease Area is mostly located within depths exceeding 25 m (82 ft), where the southern coastal migratory stock would be unlikely to occur. Roughly 25 percent of the Lease Area survey segment is 25 m (82 ft) or less in depth.

Therefore, to account for the potential for mixed stocks within the Project's offshore export cable route corridor, 90 percent of the estimated take calculation in that area is assumed to be of individuals in the southern coastal migratory stock and the remaining applied to the Western North Atlantic offshore stock within the Project's offshore export cable route corridor survey area. Within the Lease Area, 25 percent of the estimated take calculation is assumed to be of individuals from the southern coastal migratory stock and the remaining applied to the Western North Atlantic offshore stock.

The seasonality, feeding preferences, and habitat use by gray seals often overlaps with that of harbor seals in the survey areas. The density models produced by Roberts *et al*. (2016b, 2017, 2018) do not differentiate between gray seals and harbor seals. Rather, the model provides one density estimate for "seals." Therefore, for the density values reported in the IHA application, Dominion Energy assumed that half of the seals were gray seals, and the other half harbor seals.

Dominion Energy used model Version 10 (Roberts *et al.* 2021) to estimate the density of North Atlantic right whales. While two more recent versions (Version 11 and Version 11.1) of the model are available, the updates in these versions do not affect the densities in the project area. The update in Version 11 pertains to Cape Cod Bay only, which is outside of the CVOW project area. Density surfaces in Version 11.1 did not change from Version 11; rather Version 11.1 includes uncertainty surfaces as well as density surfaces.

Table 4-- Maximum seasonal densities of marine mammals in the Lease Area and OECC (animals per 100 km^2).

Species	Lease Area/ OECC
North Atlantic right whale	0.111
Humpback whale	0.060
Fin whale	0.184

Sei whale	0.001
Minke whale	0.047
Sperm whale	0.003
Pilot whale	0.029
Bottlenose dolphin (Offshore)	10.614
Bottlenose dolphin (Southern Migratory Coastal)	
Common dolphin	2.163
Atlantic white-sided dolphin	0.600
Atlantic spotted dolphin	0.311
Risso's dolphin	0.008
Harbor porpoise	0.794
Gray seal	0.514
Harbor seal	

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to harassment thresholds are calculated, as described above. Those distances are then used to calculate the area(s) around the HRG survey equipment predicted to be ensonified to sound levels that exceed harassment thresholds. The area estimated to be ensonified to relevant thresholds in a single day (zone of influence (ZOI)) is then calculated, based on areas predicted to be ensonified around the HRG survey equipment (*i.e.*, 141 m) and the estimated trackline distance traveled per day by the survey vessel (*i.e.*, 58 km). Based on the maximum estimated distance to the Level B harassment threshold of 141 m (Geo Marine Dual 400 Sparker 800J) and the maximum estimated daily track line distance of 58 km, the ZOI is estimated to be 16.4 km^2 during

Dominion Energy's planned HRG surveys. As described above, this is a conservative estimate as it assumes the HRG source that results in the greatest distance to the Level B harassment isopleth would be operated at all times during all vessel days.

$$ZOI = (Distance/day \times 2r) + \pi r^2$$

Where r is the linear distance from the source to the harassment isopleth.

Potential daily Level B harassment takes are estimated by multiplying the average annual marine mammal densities (animals/km^2), as described above, by the ZOI. Estimated numbers of each species taken over the duration of the authorization are calculated by multiplying the potential daily Level B harassment takes by the total number of vessel days. The product is then rounded, to generate an estimate of the total number of instances of harassment expected for each species over the duration of the survey. A summary of this method is illustrated in the following formula:

$$Estimated\ Take = D \times ZOI \times vessel\ days$$

Where D = average species density (animals/km^2), ZOI = maximum daily ensonified area to relevant threshold, and vessel days = 244.

Take by Level B harassment proposed for authorization is shown in Table 5.

Table 5--Total Numbers of Potential Incidental Take of Marine Mammals Proposed for Authorization and Proposed Takes as a Percentage of Population

Species	Estimated Takes by Level B Harassment	Proposed Takes by Level B Harassment [a]	Abundance	Proposed Takes as a Percent of Stock
North Atlantic right whale	4.4	4	368	1.4
Humpback whale	2.4	2	1,396	<1
Fin whale	7.4	7	6,802	<1
Sei whale	0.04	0	6,292	0
Minke whale	1.9	2	21,968	<1
Sperm whale	0.0	0	4,349	0
Short-finned pilot whale	1.2	20	28,924	<1
Long-finned pilot whale			39,215	<1

Bottlenose dolphin (Western North Atlantic Offshore stock)	279.2	279	62,851	<1
Bottlenose dolphin (Southern Migratory Coastal stock)	147.1	147	3,751	3.9
Common dolphin	86.6	4,880	172,974	2.8
Atlantic white-sided dolphin	24.1	25	93,233	<1
Atlantic spotted dolphin	12.5	4,880	39,921	12.4
Risso's dolphin	0.3	25	35,215	<1
Harbor porpoise	31.8	32	95,543	<1
Gray seal	12	12	451,431	<1
Harbor seal	12	12	61,336	<1

The proposed take listed in Table 5 generally reflects the estimated take calculation described above (Estimated Take = D × ZOI × vessel days). Further, take estimates for pilot whale and Risso's dolphin have been modified to reflect group size estimates, and take estimates for Atlantic spotted dolphin and common dolphin have been modified to reflect previous monitoring in the CVOW project area, as described further below.

Roberts *et al*. (2017) provides a density for all pilot whales that does not differentiate between short-finned and long-finned pilot whales, both of which could be in the project area. However, the take estimate for pilot whales was further adjusted to account for group size. Dominion Energy estimates that a group of 20 pilot whales (Reeves *et al.* 2002) may be taken by Level B harassment during the surveys. While the take calculation described above estimates no takes of Risso's dolphin, Dominion Energy also conservatively estimates that a group of 25 Risso's dolphins (Reeves *et al.*, 2002) may be taken by Level B harassment during the surveys. NMFS concurs with these estimates, and proposes to authorize 20 takes by Level B harassment of pilot whales and 25 takes by Level B harassment of Risso's dolphin.

Previous monitoring in the CVOW project area (Dominion Energy, 2021; 86 FR 21298; April 22, 2021 and 85 FR 81879; December 17, 2020) indicates that the calculated take of Atlantic spotted dolphin and common dolphin is too low. Given previous monitoring, Dominion Energy conservatively estimated that two pods of common dolphins, each averaging 10 individuals, may be taken by Level B harassment on each vessel day (2 pods x 10 individuals x 244 vessel days = 4,880 takes by Level B harassment of common dolphin). Dominion Energy conservatively estimates that one pod of Atlantic spotted dolphins, averaging 20 individuals, may be taken by Level B harassment on each vessel day (1 pod x 20 individuals x 244 vessel days = 4,880 takes by Level B harassment of Atlantic spotted dolphin). While these estimates are likely conservative, NMFS concurs, and proposes to authorize 4,880 takes by Level B harassment of both common dolphin and Atlantic spotted dolphin.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

Mitigation for Marine Mammals and their Habitat

NMFS proposes the following mitigation measures be implemented during Dominion Energy's proposed marine site characterization surveys. Pursuant to section 7 of the ESA, Dominion Energy would also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (*https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation*).

Marine Mammal Exclusion Zones and Harassment Zones

Marine mammal exclusion zones (EZ) would be established around the HRG survey equipment and monitored by protected species observers (PSOs):

- 500 m EZ for North Atlantic right whales during use of specified acoustic sources (sparkers, boomers, and non-parametric sub-bottom profilers).

- 100 m EZ for all other marine mammals, with certain exceptions specified below, during operation of impulsive acoustic sources (boomer and/or sparker).

If a marine mammal is detected approaching or entering the EZs during the HRG survey, the vessel operator would adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training to be provided to the survey team.

Pre-Start Clearance

Marine mammal clearance zones would be established around the HRG survey equipment and monitored by protected species observers (PSOs):

- 500 m for all ESA-listed marine mammals; and
- 100 m for non all other marine mammals.

Dominion Energy would implement a 30-minute pre-start clearance period prior to the initiation of ramp-up of specified HRG equipment (see exception to this requirement in the *Shutdown Procedures* section below) During this period, clearance zones will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective clearance zone. If a marine mammal is observed within an clearance zone during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

Ramp-Up of Survey Equipment

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the acoustic source when technically feasible. The ramp-up procedure would be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by

allowing them to vacate the area prior to the commencement of survey equipment operation at full power. Operators should ramp up sources to half power for 5 minutes and then proceed to full power.

Ramp-up activities will be delayed if a marine mammal(s) enters its respective exclusion zone. Ramp-up will continue if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).

Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

Shutdown Procedures

An immediate shutdown of the impulsive HRG survey equipment would be required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed *(i.e.*, 15 minutes for harbor porpoise, 30 minutes for all other species).

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone, shutdown would occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-

up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective exclusion zones. If the acoustic source is shut down for a period longer than 30 minutes, then pre-clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement would be waived for pinnipeds and for small delphinids of the following genera: *Delphinus, Lagenorhynchus, Stenella,* and *Tursiops*. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped detected in the exclusion zone and belongs to a genus other than those specified.

Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only non-impulsive sources (*e.g.*, echosounders).

Vessel Strike Avoidance

Dominion Energy must adhere to the following measures except in the case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or

crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

- Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the survey area during the survey, the vessels will abide by speed restrictions in the DMA;
- All survey vessels, regardless of size, must observe a 10-knot (18.5 km/hr) speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;
- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots (18.5 km/hr) or less at all times;
- All vessels must reduce their speed to 10 knots (18.5 km/hr) or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;
- All vessels must maintain a minimum separation distance of 500 m from right whales and other ESA-listed large whales;
- If a whale is observed but cannot be confirmed as a species other than a right whale or other ESA-listed large whale, the vessel operator must assume that it is a right whale and take appropriate action;
- All vessels must maintain a minimum separation distance of 100 m from non-ESA listed whales;

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.,* for animals that approach the vessel); and
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas).
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors.
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks.
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat).

- Mitigation and monitoring effectiveness.

Proposed Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Dominion Energy would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters. Section 5 of the draft IHA contains further details regarding PSO approval.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes

following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hr period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

Proposed Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a draft technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. A final report must be submitted within 30 days following resolution of any comments on the draft report. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Davis@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;

- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-start clearance survey, ramp-up, shutdown, end of operations, *etc.*).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;
- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal

fin, shape of head, and blow characteristics);

- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, *etc*.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Dominion Energy must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Dominion Energy personnel discover an injured or dead marine mammal, Dominion Energy will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

1. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
2. Species identification (if known) or description of the animal(s) involved;
3. Condition of the animal(s) (including carcass condition if the animal is dead);
4. Observed behaviors of the animal(s), if alive;

5. If available, photographs or video footage of the animal(s); and

6. General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Dominion Energy would report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 2, given that NMFS expects the anticipated effects of the proposed survey to be similar in nature. Where there are meaningful differences between species or stocks - as is the case of the North Atlantic right whale - they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is proposed to be authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of

short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.* 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations, the estimated size of the Level A harassment zones, and the required shutdown zones for certain activities.

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 141 m. Although this distance is assumed for all survey activity in estimating take numbers proposed for authorization and evaluated here, in reality, the Geo Marine Dual 400 Sparker would likely not be used across the entire 24-hour period and across all 244 vessel days. The other acoustic sources operating below 200 kHz that Dominion Energy has included in their application produce Level B harassment zones below 22 m. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the proposed survey area and there are no feeding areas known to be biologically important to marine mammals within the proposed survey area. There is no designated critical habitat for any ESA-listed marine mammals in the proposed survey area.

North Atlantic Right Whales

The status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated North Atlantic right whale mortalities began in June 2017, and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. As noted previously, the proposed survey area overlaps a migratory corridor BIA for North Atlantic right whales. Due to the fact that the impacts of the proposed survey are expected to be of low severity (as described in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat)**, the proposed survey activities are temporary, and the spatial extent of sound produced by the survey would be very small relative to the spatial extent of the available migratory habitat in the BIA (the overlap between the BIA and the proposed survey area would cover approximately 4,000 km^2 of the 269,448 km^2 BIA), right whale migration is not expected to be impacted by the proposed survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during Dominion Energy's proposed activities. The 500-m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species.

As noted previously, Level A harassment is not expected due to the small PTS zones associated with HRG equipment types proposed for use. The proposed authorization of take by Level B harassment of North Atlantic right whale is not expected to exacerbate or compound upon the ongoing UME. The limited takes of North Atlantic right whale by Level B harassment proposed for authorization are expected to be of a short duration, and given the number of estimated takes, repeated exposures of the same individual are not expected. Further, given the relatively small size of the ensonified area during Dominion Energy's proposed activities, it is unlikely that North Atlantic right whale prey availability would be adversely affected. Accordingly, NMFS does not anticipate North Atlantic right whales takes that would result from Dominion Energy's proposed activities would impact annual rates of recruitment or survival of any individuals. Thus, any takes that occur would not result in population level impacts.

Other Marine Mammal Species with Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of Dominion Energy's proposed survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The required mitigation measures are expected to reduce the number and/or severity of proposed takes for all species listed in Table 2, including those with active UMEs, to the level of least practicable adverse impact. In particular, they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. As discussed previously, take by Level A harassment (injury) is considered unlikely, even absent mitigation, based on the characteristics of the signals produced by the acoustic sources planned for use, and is not proposed for authorization. Implementation of required mitigation would further reduce this potential.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or proposed to be authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed for authorization;

- Foraging success is not likely to be impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be by Level B behavioral harassment only consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as a migratory BIA for North Atlantic right whales, the activities would occur in such a comparatively small area such that any avoidance of the survey area due to activities would not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment isopleth (141 m), which minimizes the effects of the take on the species; and
- The proposed mitigation measures, including effective visual monitoring, and shutdowns are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our

determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS proposes to authorize incidental take (by Level B harassment only) of 16 marine mammal species (with 17 managed stocks). The total amount of takes proposed for authorization relative to the best available population abundance is less than 33 percent for all stocks (Table 5).

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS OPR is proposing to authorize the incidental take of North Atlantic right, sei, fin, sperm whales, which are listed under the ESA. NMFS has determined that this activity falls within the scope of activities analyzed in NMFS GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Dominion Energy authorizing take, by Level B harassment, incidental to conducting marine site characterization surveys off of Virginia from May 2022 to May 2023, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed surveys. We also request at this time comment on the potential Renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical, or nearly identical, activities as described in the **Description of Proposed Activities** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activities** section of this notice would not be completed by the time the IHA expires and a Renewal would allow

for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA).
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: April 1, 2022.

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Kimberly Damon-Randall,

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National Marine Fisheries Service.

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